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06/24/2004

Anne D. Frame

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09/30/2008

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EXAMINER

LEITH, PATRICIA A

ART UNIT

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1655

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/500,098	Applicant(s) FRAME, ANNE D.	
	Examiner Patricia Leith	Art Unit 1655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 26-32, 34, 35, 39-49 and 56-62 is/are pending in the application.
- 4a) Of the above claim(s) 1-15, 26-31, 34, 35 and 42-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 32 and 39-41, 47-49 and 56-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-15, 26-32, 34-35, and 39-49 and 56-62 are pending in the application, claims 58-62 being added in the most recent amendment submitted by Applicant on September 9, 2008.

Claims 1-15, 26-31, 34-35 and 42-46 remain withdrawn from the merits as being directed toward a non-elected invention.

Claims 32 and 39-41, 47-49 and 56-62 were examined on their merits.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a previous Office Action.

Mammea americana may be referred to herein as *Mammea americana*, *M.americana* or 'MA.'

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 32, 39-41 and 56-58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 32 newly recites wherein the fraction having antimicrobial activity is administered to bacteria. While claim 32 previously (and presently) stated 'a composition having antimicrobial activity', claim 32 was not previously directed toward the use of a product via administration to a bacteria; but rather, was directed toward a method for making a product. The Instant disclosure as filed does not support the breadth of the large genus of 'bacteria' as now claimed. The disclosure teaches administering fractions of MA collected from chromatographic separation of an ethanol extract of MA leaves to *E.coli* and *M. smegmatis* and additionally, administration of a methylene chloride extract of MA leaves to *Mycobacterium smegmatis* (see p. 18, Specification). This disclosure is not considered a representative number of bacteria. In order to overcome this rejection, Applicant is asked to either point out in the disclosure where this information can be found or alternatively, to amend the claim accordingly. Because claims 39-41 and 56-58 are directly or indirectly dependent upon claim 32, claims 39-41 and 56-58 necessarily contain all of the limitations of claim 32

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including the New matter incorporated therein and hence, claims 39-41 and 56-58 are also properly rejected under this statute for containing New Matter.

Claim 47 now contains New Matter necessitated by Applicant's amendment to claim 32. Claim 32 now states 'and administering the fraction having antimicrobial activity to bacteria.' While the original claims of this application disclosed a method for preparing a composition having anti-microbial activity similar to claim 32 (see original claims 16 and 23) with a methylene chloride solvent, the Examiner cannot find wherein, in the original disclosure, there is a teaching of administration of a chromatography fraction of methylene chloride extracted MA. Additionally, the Examiner cannot find where anything but a methylene chloride extract of MA leaves was assayed for anti-microbial activity against *Mycobacterium smegmatis* as indicated by p. 18 of the specification. Hence, claim 47, due to the amendment to claim 32 is now different, and broader in scope than originally contemplated by Applicant and is thus considered New Matter.

Claim 60 recites '...one fraction is retained for use based on its comprising stigmasterol...'. However, the disclosure as filed only indicates that *M. americana* comprises stigmasterol-3,5-diene. Hence, Applicant's addition of the compound 'stigmasterol' which is not the disclosed compound 'stigmasterol-3,5-diene' is considered New Matter as it does not find support in the original disclosure as filed.

Additionally, Claim 60 recites '....wherein more than one fraction is eluted from the chromatographic system and one fraction is retained for use based on its comprising stigmastan or cobaltacene octamethyl.' 'More than one fraction' is new matter because this disclosure is broader in scope than what Applicant originally contemplated as the invention. Applicant only discloses that one to three fractions were collected from the elutions of each respective plant extract (see p. 22, especially lines 13-14). Further, Applicant is now claiming any potential fraction containing stigmastan or cobaltacene octamethyl obtained from any type of chromatographic separation with any type of solvent. This claim is much broader in scope than was originally contemplated according to the Instant disclosure as filed. The Specification gives general prophetic examples of how active ingredients from the disclosed plants may be separated and identified (p. 5, Spec.). The claims also are evident that Applicant contemplated an isolated or purified cobaltocene-octomet and stigmastan -3,5,-diene along with other purified compounds. However, in combination with a method for purifying MA, stigmastan-3,5—diene and cobaltocene-octomethyl were only disclosed as being obtained via ethanolic extraction of MA leaves and also were only contained in a fraction being collected via a particular HPLC protocol as described on p. 22 of the Specification. Claim 60 is presently claiming that a method is carried out wherein a fraction is retained which contains stigmastan or cobaltacene octamethyl, however, Applicant did not contemplate such a large number of potential fractions which could be produced from a chromatographic separation.

Claim 59 states 'selecting or having pre-selected a fraction having antimicrobial activity for elution...'. The Examiner cannot find explicit or implicit disclosure of this information within the Instant disclosure as filed. Hence, this statement is considered New Matter. Applicant is asked to either point out specifically where this information can be found, or to delete/amend the claim accordingly in order to overcome this rejection.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 59-62 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 59 states '...and eluting and retaining said fraction having antimicrobial activity with a mobile polar phase'. This phrase is indefinite because it cannot be determined if 'retaining' means that the media has retained the 'said fraction having antimicrobial activity' or if this means that the eluted material retains 'said fraction having antimicrobial activity.' Hence, the term 'retaining' in this claim is ambiguous and one of ordinary skill in the art would have trouble ascertaining if they were infringing upon the claim. Correction is necessary.

Claim 61 states “where said selection or pre-selection of a fraction is based by performing an antimicrobial assay.” This statement is ambiguous and confusing. First, it is not understood how the ‘fraction’ which is a composition which passess through a chromatography media can be assayed prior to performing the chromatographic fractionation? Further, what is the antimicrobial assay being performed on? This statement is confusing and the ordinary artisan would have trouble ascertaining if they were infringing upon the claimed invention by use of this language in the claim.

Claims 60 – 62 depend upon claim 59 and therefore contain all of the limitations of claim 59. Because claims 60-62 do not remedy the deficiencies of claim 59 under this statute, claims 60—62 are also properly rejected under this statute for containing indefinite subject matter.

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 32 and 39-41, 48-49 and 56-62 are newly rejected, as necessitated by Applicant's most recent amendments to the claims on 9/9/08 under 35 U.S.C. 103(a) as being unpatentable over Frame et al. :*Antimicrobial Phytochemicals*, P.R. Health Sci. J., (1998) (as cited in the IDS submitted by Applicant on 6/24/2004) in view of McMurry (1992) in view of Greenspan et al. (1996).

Applicant has amended claim 32 in such a manner as to include wherein the composition of the method is added to a bacteria which was not previously included in the claims. Additionally, Applicant has added claim 59 which states 'selecting or having pre-selected a fraction having antimicrobial activity for elution from the chromatographic separation system.' The Examiner was prompted to cite the Frame et al. reference solely in response to Applicant's amendments because the Greenspan et al. reference did not specifically teach that their extract was anti-bacterial, and hence, did not teach or suggest administering their extract to a bacteria or 'selecting' or 'pre-selecting' a fraction having antimicrobial activity. The previous rejection was a proper rejection for the reasons set forth keenly in said rejection within the previous Office action.

Frame et al. (1998) taught that the ethanolic extract of *Mammea americana* leaves displayed inhibitory activity against *Mycobacterium tuberculosis*, demonstrated via screening for anti-*Mycobacterium* activity using the Buer-Kirby agar diffusion method (see entire reference, especially 'Materials and Methods', pp. 244-247, Tables 1 and 2, p. 247). Frame et al. indicated that "...efforts are directed at purifying and

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characterizing the physical and chemical properties of the promising anti-mycobacteriological agents discovered in this study.” (p. 251, under ‘Discussion’).

Frame et al. did not teach chromatographic separation of the endogenous components of the *M. americana* ethanol extract (including elution) to obtain one fraction or more than one fraction, wherein the composition comprised stigmastan-3,5,-diene, friedelin and additionally cyclododecane or acetic acid.

The use of chromatography in science is ubiquitous. Chromatography media are conventionally used to separate compounds in crude extract preparations based upon solubility, ionic charge and size for example (see McMurray pp. 413-414).

Greenspan et al. (1996) disclosed a method for extracting leaves and seeds of *Mammea americana* to produce an insecticidal composition against larvae of *Diabrotica virgifera* v. (see entire reference). Specifically, Greenspan et al. lyophilized the seeds and leaves (respectively) and carried out individual hexane (organic solvent) extractions of the lyophilized seeds and leaves followed by thin layer chromatography to elucidate the compounds endogenous therein (see ‘Materials and Methods’, pp. 237-238).

Hence, it was known in the art that an alcoholic extract of *Mammea americana* inhibited the growth of *Mycobacterium tuberculosis in-vitro* via assaying for mycobacterial activity; specifically assaying for *Mycobacterium tuberculosis* activity was

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described by Frame et al. Clearly relayed by Frame et al. was the advantageous nature of purifying compounds responsible for this anti-mycobacterial effect. The next natural step in purification of compounds from the crude MA extract would be chromatographic separation. This step is not considered unique or inventive in that the use of chromatography, again, is ubiquitous in the art of science; widely used in order to successfully separate and elucidate endogenous phytochemicals. Greenspan et al. themselves clearly used chromatography to separate endogenous chemicals in their MA extract. Accordingly, motivation was present in the art to further purify an active fraction or to identify and isolate active ingredients present in the ethanolic extract of *Mammea americana* to use on *Mycobacterium* as was plainly stated by Frame et al. Greenspan et al. for example, used TLC (thin layer chromatography) to separate endogenous compounds in an MA extract. Although Greenspan et al. did not specifically teach elution of the extract from a chromatographic system, this is clearly because Greenspan et al. used TLC and not column chromatography to elucidate the MA extracts. One of ordinary skill in the art would have had a reasonable expectation of success in carrying out the claimed process in that the ordinary artisan would have been well-aware that column chromatography systems were well-known and well-utilized at the time the invention was made and that column chromatography, which incorporates eluting compounds from the column containing stationary medium was well-known (again, see McMurray). Where claim 59 states 'selecting or having pre-selected a fraction having antimicrobial activity for elution' is very broad and is covered by the combination of references. To reiterate, it would have been obvious to submit

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the extract of Frame et al. to chromatography techniques to elucidate anti-bacterial compounds therein. It was known that the alcoholic extract had anti-microbial activity and, again, lacking any substantive characteristics regarding the chromatography process in the claims, the entire extract may be eluted via the method of claim 59. Further, no matter what chromatography media is used, a fraction eluting from a chromatographic separation system containing the ethanol extract of MA will contain an active fraction. 'Selecting or having pre-selected a fraction having antimicrobial activity' is simply a mental step in the process and does not significantly change the process as claimed. Applicant is adding steps into the method which are conventional steps in purifying components of crude mixtures; such steps being well-known in the art and utilized in purification protocols.

There is no step in the methods as claimed which indicates what type of column media was used (stationary phase), what fractions were collected or what organic solvent was used; in other words, there is no series of steps present in the claimed invention which creates a non-obvious variation of what the prior art as combined plainly renders *prima facie* obvious. While the prior art did not specifically teach placing the crude MA extract over a column, but instead, chose to elucidate their extract via TLC, it is deemed that the ordinary artisan would have clearly recognized the advantage of using column chromatography for processing large batches of extract in order to manufacture and standardize the extract.

Additionally, considering the lack of specifics in the claims regarding specific chromatography media, elution type (solvent), elution times, number and volumes of fractions collected, the composition eluted from the method of the claims may be the same composition which was placed in (or on/over) the chromatography apparatus. The claim is so extensively broad, that it reads on eluting the entirety of the original extract which was placed in (or on) the chromatography media into one vessel. Since Frame et al. already taught that the ethanolic extract of MA leaves possessed anti-bacterial activity, the 'fraction' or 'composition' as referred to by claim 32 which is 'administered' to a bacteria may be the same 'composition' which was assessed for anti-bacterial activity by Frame et al.

Claims 39-41 are directed to wherein the composition comprises stigmastan-3-5,-diene, friedelin for example. Claim 57 is directed toward wherein the composition comprises a terpene a caryophyllene and a cyclododecane. Applicant's specification, in Table 2 identifies compounds in the methylene chloride extract as well as the ethanol extract of MA leaf. Table 5 of Applicant's specification displays certain fractions from an extract of MA, however, the specification does not definitively state from which extract these fractions were obtained. First, it must be pointed out that neither cobaltocene-octomet, friedelin nor stigmastan-3,5-diene were identified by gas chromatography in either of the crude methylene chloride or the ethanol extracts of MA leaf and are therefore not represented by Table 2. The first time these compounds were identified

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were after fractionation of the crude MA extract and analyzed by GC/MS (according to Table 5). Upon careful consideration, it can be deduced that the fractions of MA displayed in this table originate from the ethanolic extract. This deduction arises because acetic acid was identified in HPLC fraction 2 of the MA extract according to Table 5; however, *acetic acid was only identified in the ethanol extract of MA and not in the methylene chloride extract of MA*. Clearly, if acetic acid were in the methylene chloride extract of MA the GC/MS would have detected it. The other compounds identified in the fractions as displayed in Table 5 were common to both the methylene chloride as well as the ethanol extract. Hence, it can be said that the ethanol extract of MA leaf contains friedelin, stigmastan-3,5-diene, cobaltocene-octamethyl, cyclodecene, caryophyllene and acetic acid. Further, it must also be noted that Applicant states that the HPLC column was eluted with a polar solvent: dilute phosphoric acid in methanol. This elution system would not be appropriate for use with a methylene chloride extract which is non-polar (see p. 22, Specification). And again, because the claims are so broad that they read on elution of the entirety of the extract which is placed in (or on, or over) a chromatographic media, it is deemed that the product obtained from the claimed invention is equivalent to the alcoholic extracts of MA as disclosed by Frame et al. as well as Greenspan et al. Hence, the combination of references makes obvious administration of a 'fraction' as referred to by Applicant's claims, which is analogous to the ethanolic extract of Frame et al., to bacteria.

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Claims 32 , 39-41, 47-49 and 56-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frame et al. (1998) in view of Greenspan et al. (1996) in view of McMurray (1992) in view of Habtemariam et al. (US 6,225,342) **or** Kanojia (US 4,046,882 A).

Claim 47 states wherein the organic solvent of claim 32 is specifically methylene chloride (also known as dichloromethane).

The teachings of Frame et al., Greenspan et al. and McMurray were discussed *supra*. It is reiterated that Greenspan incorporated hexane for extraction of *Mammea americana* leaves and seeds, however, did not specifically disclose use of methylene chloride, nor did Greenspan et al. explicitly disclose that the extract was administered to a bacteria *per se*.

Interchanging non-polar solvents was routine, conventional practice in the herbal extract art. Methylene chloride, also known as dichloromethane, was also a well known non-polar solvent (extractant) used to extract plant materials. Both Habtemariam et al. (US 6,225,342) as well as Kanojia et al. disclose the use of hexane or methylene chloride for use as a non-polar solvent in extracting plant material. While it is accepted, of course that hexane (as disclosed by Greenspan et al.) and dichloromethane are not *exactly* the same solvent one of ordinary skill in the art would have had a reasonable expectation of substituting the hexane of Greenspan et al. with methylene chloride

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because both of these solvents were known non-polar solvents used for plant extraction and known to be interchangeable. “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton” *KSR* 127S. Ct. at 1742. Applicant has not demonstrated within the instant disclosure as filed that methylene chloride fairs any better than any other non-polar solvent which is known, and conventionally used in the prior art. Therefore, the Applicant’s use of methylene chloride over hexane, without showing any unexpected results therefrom, is considered an obvious variation of the method already disclosed in the art by Greenspan et al.

While Greenspan et al. did not explicitly teach that their extract was administered to a bacteria, bacteria are ubiquitous. Claim 47 is broad enough to encompass preparing a methylene chloride extract of MA and administering this extract to bacteria (again, it is reiterated that lacking specific steps in claim 32, the extract put in or on or over the chromatography media may be the same extract which is eluted from the chromatography media). Because, as explained *supra*, one of ordinary skill in the art would have been motivated to substitute a methylene chloride extract for the hexane extract of Greenspan et al. to produce an insecticidal composition, it is highly likely that administration of a methylene chloride extract to an insect would also be administration to a bacteria since bacteria are ubiquitous and reside most surfaces, and almost certainly on the surface of insects.

[If]... there are [a] finite number of identified, predictable solutions, [a] person of ordinary skill in art has good reason to pursue known options within his or her technical grasp, and if this leads to anticipated success, it is likely product of ordinary skill and common sense, not innovation *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 U.S. 2007.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Response to Arguments

Applicant first states that "From the OA [Office Action] it is not clear what particular claims are rejected over only Greenspan in light of McMurry, but it would appear that this rejection covers all pending claims but claim 47" (p. 2, Remarks). The rejection set forth under 35 USC 103(a) in the non-final Office action indicated that claims 32-33, 39-41, 48-49 and 56-57 were rejected under 35 USC 103(a) as being unpatentable over Greenspan et al. in view of McMurry. The Examiner's statement 'the examiner inadvertently omitted claims 47-49 from the previous rejection' is not indicating that claim 47 was included in this particular rejection, this statement was meant to merely indicate that claims 47 -49 were not previously indicated in any rejection in the

Office action mailed on 3/25/08 as they were inadvertently stated as being withdrawn from consideration. It is clear from the record of this case that on pages 6-7 of the non-final Office action mailed 7/22/2008 that claim 47 is rejected under 35 USC 103 as being unpatentable over Greenspan et al. in view of McMurry in view of Habtemariam et al. Hence, Applicant's statements concerning the rejection of the claims is correct.

Applicants' arguments are directed solely toward the previous rejections which are herein modified to address limitations which were newly added into the claimed invention. Applicant's arguments primarily center around the fact that the previous rejections (i.e., the rejections of in view of Greenspan et al. (1996) in view of McMurry (1992) as well as Greenspan et al. (1996) in view of McMurry (1992) in view of Habtemariam et al. (US 6,225,342) **or** Kanojia (US 4,046,882 A)) did not make obvious the claimed invention in light of the new limitations added by Applicant. The Examiner agrees with these statements; that is, that the previous rejections do not make obvious the claimed invention, hence the addition of the Frame et al. reference in order to render the claims *prima facie* obvious, necessitated by Applicant's amendments to the claimed invention.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia Leith whose telephone number is (571) 272-0968. The examiner can normally be reached on Monday - Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terry McKelvey can be reached on (571) 272-0775. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patricia Leith
Primary Examiner
Art Unit 1655

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